

REMARKS

Claims 1-14 are pending in this application. Claims 5, 7, 8, 10 and 14 have been withdrawn from consideration. By this Amendment, claims 1, 2, 4, 6-8 and 11-14 are amended. Support for the amendments can be found, for example, in the specification (see page 4, lines 18-19 and page 9, lines 12-13; and Fig. 1). No new matter is added.

Entry of the amendments is proper under 37 CFR §1.116 because the amendments: (a) place the application in condition for allowance (for the reasons discussed herein); (b) do not raise any new issue requiring further search and/or consideration (as the amendments amplify issues previously discussed throughout prosecution); (c) satisfy a requirement of form asserted in the previous Office Action; (d) do not present any additional claims without canceling a corresponding number of finally rejected claims; and (e) place the application in better form for appeal, should an appeal be necessary. The amendments are necessary and were not earlier presented because they are made in response to arguments raised in the Final Rejection. Entry of the amendments is thus respectfully requested.

In view of the foregoing amendments and the following remarks, reconsideration and allowance of the claims are respectfully requested.

I. Rejection Under 35 U.S.C. §112

The Patent Office rejects claims 1-4, 6, 9 and 11-13 under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. By this Amendment, claims 1 and 2 are amended to obviate the rejection. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

II. Rejection Under 35 U.S.C. §102

The Patent Office rejects claims 1 and 6 under 35 U.S.C. §102(b) as allegedly being anticipated by WO 98/13882 to Van Andel et al. ("Van Andel"). This rejection is respectfully traversed.

Claim 1 recites, *inter alia*: "A process for manufacturing a solar cell foil... wherein in any one of the preceding steps, applying an etch resist located on a second side of the temporary substrate opposite to a first side of the temporary substrate covering the interconnect, and at least not at the entire location of the front groove, and followed by selectively removing portions of the temporary substrate where it is not covered with the etch resist, to obtain the solar cell foil provided with a protective cap on the TCO." (Emphasis added). Van Andel does not disclose at least the above features of claim 1.

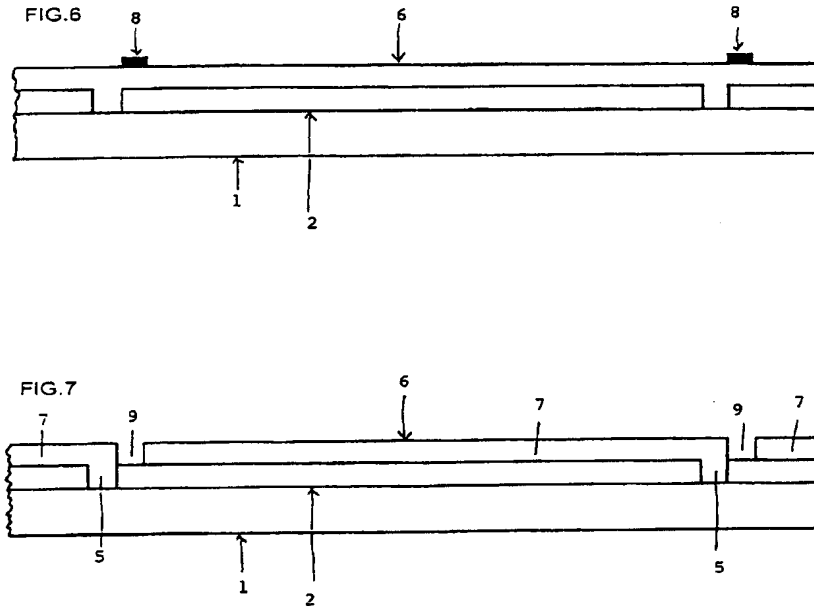
The Office Action asserts that Van Andel discloses various features recited in claim 1. Specifically, the Office Action asserts that Van Andel discloses :

"...an etch resist provided on a bottom side of the temporary substrate (1) opposite to a first side (top side) of the temporary substrate (1) at least at the location of the interconnect (9)... the protective cap (contact for connection to any auxiliary apparatus or net) (portion of the substrate which is not etched) (page 5, lines 12-21; page 16, line 27 to page 17, line 2) is formed on the back side of the TCO (2) by selectively etching the substrate (1)...a part of the [temporary] substrate is not etched out so that it can form a contact (instant claimed protective cap) on the TCO (2)..." (Office Action, pages 4-5).

For at least the reasons presented below, Applicant respectfully disagrees with the Patent Office's interpretation of Van Andel and asserts that Van Andel fails to disclose each feature of claim 1.

Van Andel is directed to a method for manufacturing a photovoltaic foil. A temporary substrate **1** is provided, upon which a transparent conductor **2** is applied, the latter of which the Office Action interprets as a front electrode (see Van Andel, page 17, line 26 to page 18, line 1; and Office Action, page 3). Portions of the transparent conductor **2** are removed by laser scribing or etching to create stripes **4** separated by a first set of tracks **5** of removed conductor material (Van Andel, page 18, lines 7-10 and Figs. 3-4). A photovoltaic layer **6** is applied onto the transparent conductor **2** and a second pattern of stripes **7** is created, and a

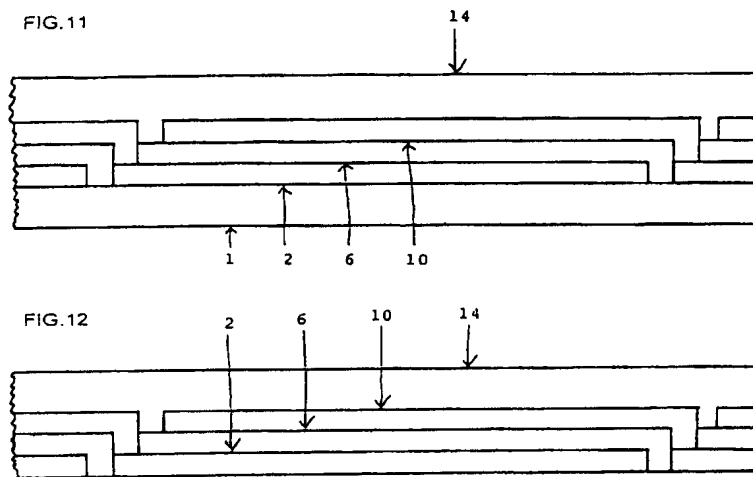
second set of tracks 9, as illustrated below in Figs. 6 and 7 (Van Andel, page 18, lines 7-20 and Figs. 6 and 7).



Figs. 6 and 7 of Van Andel

The second set of tracks 9 of removed conductor material are interpreted by the Patent Office as allegedly the location of an interconnect (Office Action, page 4).

In subsequent steps, a carrier 14 is applied onto a back electrode 10, after which the temporary substrate 1 is removed by etching (Van Andel, page 16, lines 22 to page 17, line 2; page 19, lines 1-4 and Figs. 11 and 12). An etch resist can be applied if it is desired to remove only parts of the temporary substrate where incident light (the power source) needs to reach the transparent conductor 2 (*Id.*). Figures 11 and 12 of Van Andel are reproduced below for convenience.



Figs. 11 and 12 of Van Andel

It is well settled that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *See* MPEP §2131. Based on the above, Van Andel fails to disclose a method wherein in any one of the preceding steps, applying an etch resist located on a second side of the temporary substrate opposite to a first side of the temporary substrate covering the interconnect, and at least not at the entire location of the front groove, and followed by selectively removing portions of the temporary substrate where it is not covered with the etch resist, to obtain the solar cell foil provided with a protective cap on the TCO, as recited in claim 1. Instead, Van Andel merely applies a transparent conductor 2 (interpreted by the Office Action as a TCO) on the temporary substrate 1, and later removes the temporary substrate 1 by etching absent any selectivity in its removal, and without forming a protective cap on the TCO, as recited in claim 1. As illustrated by Figs. 11 and 12 of Van Andel, no portion of the temporary substrate 1, at any location, is retained for the purposes of creating a protective cap covering the TCO, as recited in claim 1 (see also specification, Figs 1a and 1b).

Furthermore, the Patent Office cites to two specific portions of Van Andel in support of its assertion that Van Andel discloses not etching a portion of the temporary substrate so that it can form a protective cap. Namely, the Patent Office cites to: (1) Van Andel, page 5, lines 12-21; and (2) Van Andel, page 16, line 27 to page 17, line 2 (Office Action, page 5). However, neither of these portions of Van Andel reasonably support the Patent Office's assertion that Van Andel discloses providing the protective cap, as recited in claim 1.

In the first cited portion, Van Andel discloses one benefit to using metal in its photovoltaic foil is the ability to form "side" electrodes by removing only a portion of the temporary substrate (Van Andel, page 5, lines 16-19). However, the side electrodes of Van Andel cannot be reasonably interpreted to be present at the location of the interconnects, at least without disrupting the series connection and rendering the device unfit. The side electrodes of Van Andel serve as a contact for connecting the photovoltaic foil to an auxiliary apparatus (*Id.*). On the other hand, the interconnect recited in claim 1 connects one cell in a solar array to the adjacent cell to form a series connection and thus increase the obtainable voltage (see specification, page 3, lines 25-31). Thus, a person skilled in the art of electronics would immediately understand that the side electrodes of Van Andel cannot reasonably be interpreted as interconnects.

The second cited portion of Van Andel refers back to the side electrodes, and recites not etching portions of the temporary substrate, "only at those parts of the surface where incident light needs to reach the transparent conductor...preferably in narrow stripes at most covering two transparent conductor tracks" (Van Andel, page 14, lines 1-7 and page 16, line 27 to page 17, line 2). Although Van Andel may disclose one example of selective etching, the selectivity is directed to creating side electrodes by covering the conductor tracks 5, which does not cover the tracks 9, which the Patent Office interprets as the location of the interconnect.

Based on the above, Van Andel fails to disclose each and every feature of claim 1 and, thus, does not anticipate claim 1. Claim 6 depends from claim 1 and, likewise, is not anticipated by Van Andel for at least the reasons set forth above with respect to claim 1, as well as for the additional features recited therein. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

III. Rejections Under 35 U.S.C. §103

A. Van Andel

The Office Action rejects claims 1, 2, 6 and 11 under 35 U.S.C. §103(a) as allegedly being unpatentable over Van Andel. This rejection is respectfully traversed.

The above discussion with respect to Van Andel under §102 applies.

Van Andel fails to provide any reason or rationale for one of ordinary skill in the art to have modified its photovoltaic foil to have included each and every feature of claim 1, with any reasonable expectation of success without the benefit of Applicant's specification. As discussed in detail above, Van Andel merely discloses selective etching of the temporary substrate to form side electrodes.

Any assertion that one of ordinary skill in the art would have modified Van Andel to have included a step of applying an etch resist located on a second side of the temporary substrate opposite to a first side of the temporary substrate covering the interconnect, and at least not at the entire location of the front groove, and followed by selectively removing portions of the temporary substrate where it is not covered with the etch resist, to obtain the solar cell foil provided with a protective cap on the TCO, without any indication in the applied reference to have made such extensive modifications, would be impermissible hindsight reasoning based solely upon Applicant's disclosure and would not constitute a showing of *prima facie* obviousness.

Based on the above, Van Andel would not have rendered obvious claim 1. The remaining claims variously depend from claim 1 and, likewise, also would not have been rendered obvious by the applied reference, for at least the reasons set forth above with respect to claim 1, as well as for the additional features recited therein.

Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

B. Van Andel And Morikawa

The Office Action rejects claims 3, 4, 9, 12 and 13 under 35 U.S.C. §103(a) as allegedly being unpatentable over Van Andel and further in view of U.S. Patent No. 5,637,510 to Morikawa et al. ("Morikawa"). This rejection is respectfully traversed.

The above discussion with respect to Van Andel applies.

Claims 3, 4, 9, 12 and 13 depend from claim 1 and, thus, contain all of the features recited in claim 1. Therefore, the deficiencies of Van Andel with respect to claim 1, as discussed above, are applicable to claims 3, 4, 9, 12 and 13. The Office Action applies Morikawa as allegedly addressing additional features disclosed in the dependent claims. Thus, Morikawa does not cure the deficiencies of Van Andel with respect to claim 1. Based on the above, Van Andel and Morikawa would not have rendered claim 1 obvious. The remaining claims variously depend from claim 1 and, likewise, would not have been rendered obvious by the applied references for at least the reasons set forth above with respect to claim 1, as well as for the additional features recited therein.

Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

C. Van Andel And Jordan

The Office Action rejects claims 1, 2, 6 and 11 under 35 U.S.C. §103(a) as allegedly being unpatentable over Van Andel in view of U.S. Patent No. 4,243,432 to Jordan et al. ("Jordan"). This rejection is respectfully traversed.

The above discussion with respect to Van Andel in the rejections under §102 and §103 apply here.

Jordan does not cure the deficiencies of Van Andel with respect to claim 1. Jordan merely discloses a photovoltaic panel formed into a plurality of individual cells, where portions of a Cu_xS film **22** and CdS film **14** are removed from above a portion of the SnO_x film **12**, as illustrated in Figure 2 (Jordan, col. 5, lines 55-60).

Based on the above, Van Andel and Jordan would not have rendered claim 1 obvious. The remaining claims variously depend from claim 1 and, likewise, would not have been rendered obvious by the applied references, for at least the reasons set forth above with respect to claim 1, as well as for the additional features recited therein.

Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

D. Van Andel, Jordan And Morikawa

The Office Action rejects claims 3, 4, 9, 12 and 13 under 35 U.S.C. §103(a) as allegedly being unpatentable over Van Andel in view of Jordan and further in view of Morikawa. This rejection is respectfully traversed.

The above discussions with respect to Van Andel and Jordan apply here.

Claims 3, 4, 9, 12 and 13 depend from claim 1 and, thus, contain all of the features recited in claim 1. Thus, the deficiencies of Van Andel and Jordan with respect to claim 1 apply here. The Patent Office applies Morikawa as allegedly addressing additional features

recited in the dependent claims. For the reasons discussed above, Morikawa does not cure the deficiencies of Van Andel and Jordan with respect to claim 1.

Based on the above, Van Andel, Jordan and Morikawa would not have rendered claim 1 obvious. The remaining claims variously depend from claim 1 and, likewise, would not have been rendered obvious by the applied references for at least the reasons set forth above with respect to claim 1, as well as for the additional features recited therein.

Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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